

# SERVICE MANUAL

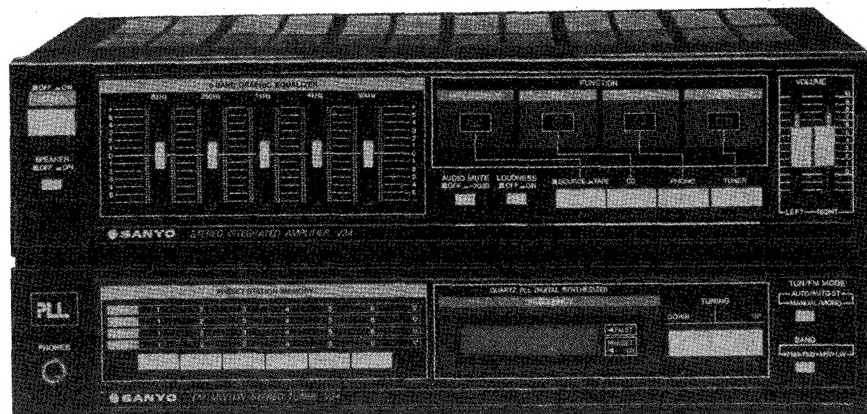
## RECEIVER



# V 34

BLACK

(EUROPE/WEST GERMANY/ITALY)



# AK 32

### SPECIFICATIONS

#### Note:

The below mentioned specifications are mainly based on the IHF measurements standard. They can therefore not directly be compared with specifications based on the DIN standard or other standards.

#### AMPLIFIER

Continuous output power	30 W x 2 (at 8 ohms, 0.9% distortion)
Input sensitivity and impedance	CD: 150 mV/47 kohms
Frequency response	20 Hz — 35 kHz (CD)
Graphic equalizer	±10 dB (63/250/1000/4000/16000 Hz)
Loudness control response (Vol. -30dB)	+8 dB/+4 dB (100 Hz/10 kHz)
Signal to noise ratio	95 dB (CD)

#### TUNER

##### FM section

Frequency range	87.5 — 108 MHz (0.05 MHz steps)
Usable sensitivity	2.0 $\mu$ V (mono)
Signal to noise ratio (1 mV ANT.)	65 dB (mono)
Harmonic distortion (1 kHz)	0.5% (mono)
Frequency response	30 Hz — 15 kHz (+1/-2 dB)
Stereo separation (1 kHz)	40 dB
Aerial input	75 ohms unbalanced

##### AM (MW/LW) section

Frequency range	MW: 522 — 1611 kHz (9 kHz steps) LW: 144 — 290 kHz (1 kHz steps)
Sensitivity	MW: 500 $\mu$ V/m, LW: 1000 $\mu$ V/m

#### GENERAL

Power requirements	AC: 220V, 50 Hz
Power consumption	190 W
Dimensions (W x D x H)	Approx. 335 x 290 x 150 mm (13-1/8" x 11-3/8" x 6")
Weight	Approx. 5 kg (11 lbs.)

Specifications subject to change without notice.

WM-18612

# TUNER ADJUSTMENT

## GENERAL ADJUSTMENT CONDITION

1. Power source voltage is DC12V.
2. Use a screw driver with plastic grip for all adjustment.

3. Signal input must be kept as low as possible to avoid overload.
4. Use an output meter of the highest possible sensitivity.

### (1) FM Band

- Set BAND switch in the FM position.

\* FM-SG: Standard modulation frequency, 1,000Hz; frequency deviation,  $\pm 75\text{kHz}$  dev.

ADJUSTING CIRCUIT	FREQUENCY INDICATED POSITION	INPUT CONDITION		OUTPUT CONDITION		ADJUST-ING POINT	ADJUSTING PROCEDURE
		MEASURING INSTRUMENT	FREQUENCY	CONNECT. POINT	MEASURING INSTRUMENT	CONNECT. POINT	
I. F.	V-curve	FM sweep Generator	10.7MHz (nonmodulation)	TP2 TP1	FM sweep Generator	TP3 TP1	<ul style="list-style-type: none"> <li>• Match to the frequency of ceramic filter.</li> <li>• Adjust so that the symmetrical wave from becomes the maximum.</li> </ul>
	S-curve	FM sweep Generator	10.7MHz (nonmodulation)	TP2 TP1	FM sweep Generator	TP5 TP1	<ul style="list-style-type: none"> <li>• Match to the frequency of ceramic filter.</li> <li>• Adjust so that the symmetrical wave from becomes the maximum.</li> </ul>
Covering frequency	HIGH	—	—	—	Digital voltmeter	TP401 TP1	<ul style="list-style-type: none"> <li>• Adjust so that the digital voltmeter indication becomes <math>8.0 \pm 0.5\text{V}</math>.</li> </ul>
	LOW	—	—	—	Digital voltmeter	TP401 TP1	<ul style="list-style-type: none"> <li>• Confirm so that the digital voltmeter indication becomes approx. <math>1.5 \sim 1.6\text{V}</math>.</li> </ul>
Tracking frequency	LOW	FM-SG	90.0MHz (20dB)	FM antenna terminal (75 $\Omega$ )	VTVM Oscilloscope	Output plug	<ul style="list-style-type: none"> <li>• Adjust so that the output wave form becomes the maximum.</li> </ul>
	HIGH	FM-SG	106.0MHz (20dB)	FM antenna terminal (75 $\Omega$ )	VTVM Oscilloscope	Output plug	<ul style="list-style-type: none"> <li>• Adjust so that the output wave form becomes the maximum.</li> </ul>
I. F. (distortion factor)	98.0MHz	FM-SG	98.0MHz 66dB	FM antenna terminal (75 $\Omega$ )	Digital voltmeter	TP201 TP202	<ul style="list-style-type: none"> <li>• Tune exactly, and adjust so that the digital voltmeter indication becomes <math>0 \pm 0.02\text{V}</math>.</li> </ul>
	98.0MHz	FM-SG	98.0MHz 23dB	FM antenna terminal (75 $\Omega$ )	Digital voltmeter	TP203 TP1	<ul style="list-style-type: none"> <li>• Tune exactly, and adjust so that the digital voltmeter indication becomes less than 2V.</li> </ul>
S. D. (Station Detector)	98.0MHz	FM-SG	98.0MHz 66dB (nonmodulation)	FM antenna terminal (75 $\Omega$ )	VTVM Oscilloscope Counter	TP301 TP1	<ul style="list-style-type: none"> <li>• Turn SVR-302 to the position where the STEREO indicator lights up, and stop it there.</li> <li>• Tune exactly at non-modulation, and adjust so that the counter value becomes <math>19.00 \pm 0.05\text{kHz}</math>.</li> </ul>
VCO (19kHz)	98.0MHz	FM-SG	98.0MHz 66dB	FM antenna terminal (75 $\Omega$ )	VTVM Oscilloscope	Output plug	<ul style="list-style-type: none"> <li>• Adjust so that the leakage currents of the right and left channels are minimized in good balance.</li> </ul>
Separation (Stereo mode)	98.0MHz	FM-SG STEREO MODULATOR	98.0MHz 66dB	FM antenna terminal (75 $\Omega$ )	VTVM Oscilloscope	Output plug	<ul style="list-style-type: none"> <li>• Adjust so that the leakage currents of the right and left channels are minimized in good balance.</li> </ul>

STEREO MODULATOR: Frequency deviation  
Main signal —  $\pm 67.5\text{kHz}$  dev.  
Pilot signal —  $\pm 6.75\text{kHz}$  dev.

Note: Since TP202 is not a ground voltage, it should not be short-circuited to the case of the meter.

# TUNER ADJUSTMENT

## (2) MW Band

- Set BAND switch in the MW position.

\* AM-SG: Standard modulation frequency, 400Hz; percentage 30% modulation.

ADJUSTING CIRCUIT	FREQUENCY INDICATED POSITION	INPUT CONDITION			OUTPUT CONDITION		ADJUST-ING POINT	ADJUSTING PROCEDURE
		MEASURING INSTRUMENT	FREQUENCY	CONNECT. POINT	MEASURING INSTRUMENT	CONNECT. POINT		
I. F.	Lower limit	AM sweep Generator	459kHz nonmodulation	AM loop-ant. Terminal Shield case	AM sweep Generator	TP7	T251	● Match to the frequency of ceramic filter. ● Adjust so that the symmetrical wave form becomes the maximum.
	LOW	—	—	—	Digital voltmeter	TP401	L153	● Adjust so that the digital voltmeter indication becomes $1.2 \pm 0.03V$ .
Covering frequency	1611kHz (High end)	—	—	—	Digital voltmeter	TP401	CT153	● Adjust so that the digital voltmeter indication becomes $8 \pm 0.05V$ .
	LOW	AM-SG	603kHz 75dB	IRE loop antenna	VTVM Oscilloscope	Output plug	L151	● Adjust so that the output value becomes the maximum.
Tracking frequency	1404kHz	AM-SG	1404kHz 75dB	IRE loop antenna	VTVM Oscilloscope	Output plug	CT151	● Adjust so that the output value becomes the maximum.
	S. D. (Station Detector)	999kHz	AM-SG	1000kHz 83dB	IRE loop antenna	Digital voltmeter	TP203	● Tune exactly, and adjust so that the digital voltmeter indication becomes less than 2V.

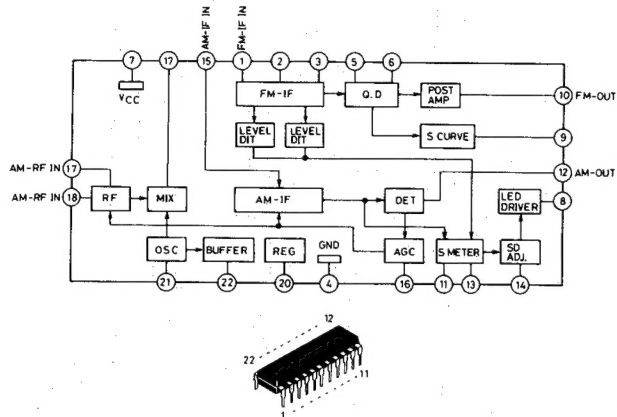
## (3) LW Band

- Set BAND switch in the LW position.

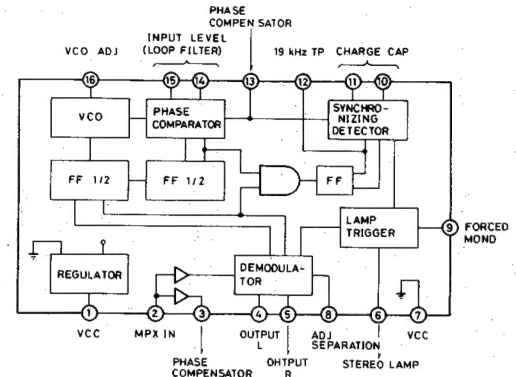
ADJUSTING CIRCUIT	FREQUENCY INDICATED POSITION	INPUT CONDITION			OUTPUT CONDITION		ADJUSTING POINT	ADJUSTING PROCEDURE
		MEASURING INSTRUMENT	FREQUENCY	CONNECT. POINT	MEASURING INSTRUMENT	CONNECT POINT		
Covering frequency	LOW	AM-SG	144kHz	AM loop antenna	Digital voltmeter	TP401 (H) TP1 (E)	L154	● Adjust so that the digital voltmeter indication becomes $1.6 \pm 0.03V$ .
	HIGH	AM-SG	290kHz	AM loop antenna	Digital voltmeter	TP401 (H) TP1 (E)	CT154	● Adjust so that the digital voltmeter indication becomes $6.5 \pm 0.1V$ .
Tracking frequency	LOW	AM-SG	162kHz	AM loop antenna	VTVM Oscilloscope	Output plug	L152	● Adjust so that the output value becomes the maximum.
	HIGH	AM-SG	279kHz	AM loop antenna	VTVM Oscilloscope	Output plug	CT152	● Adjust so that the output value becomes the maximum.

## IC BLOCK DIAGRAM

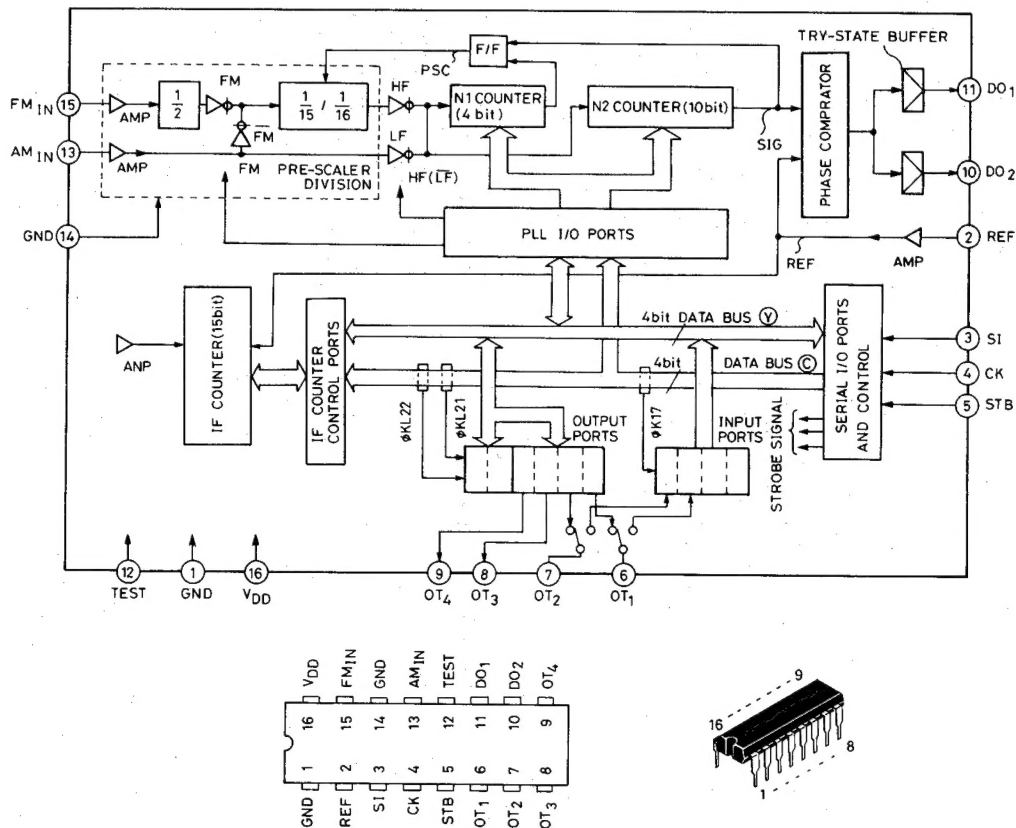
IC201 LA1265 (TUNER SYSTEM)



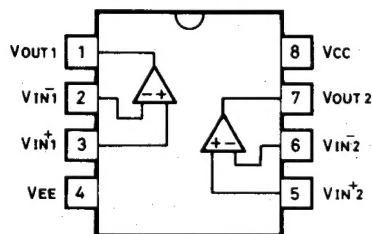
IC301 LA3361 (FM PLL-MPX STEREO DEMODULATOR)



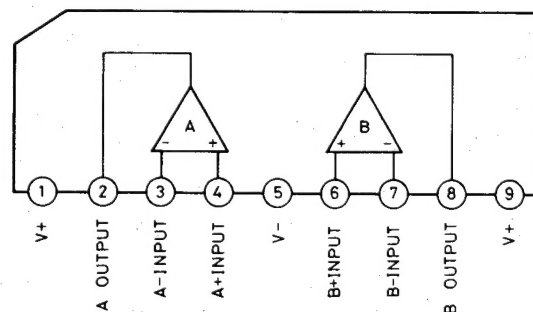
IC401 TC9172P (HIGH-SPEED PLL WITH PRE-SCALER)



IC701 LA6458DS

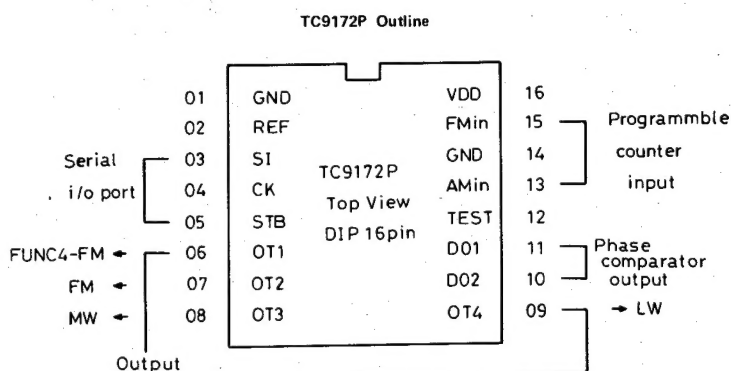
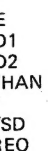
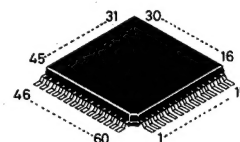


IC721 LA6458S





**IC402 TC9302AF-019**



## IC BLOCK DIAGRAM

### SYSTEM SUMMARY (TC 9302AF-019)

Combined with PLL LSI TC 9172P, high efficiency digital tuning system with FM/MW/LW 3-band can be made.

### BAND

BAND	CODE A B	FREQUENCY (Hz)	STEP (Hz)	Fref (Hz)	IF (Hz)
FM	0 0	87.9 ~ 107.9 M	200K	25K	+10.7M
	1 0	87.50 ~ 108.00 M	50K		-10.7M
	0 1	76.0 ~ 90.0 M	100K		
	1 1	87.40 ~ 108.10 M	50K		+10.7M
MW	0 0	530 ~ 1600 K	10K	10K	+450K
	1 0	531 ~ 1602 K	9K	9K	+459K
	0 1	522 ~ 1611 K			
	1 1	522 ~ 1629 K			
LW	0 0	LW NO BAND	AUTO MAN 9K/1K	1K	+459K
	1 0	153 ~ 281 K			
	0 1	144 ~ 290 K			

### I/O PORT

#### TC9302AF-019

PORT	NO.	NAME	FUNCTION	ACTIVE	FIRST SETTING
MUTE	41	MUTE	MUTE OUTPUT	H	H
P2-1	40	BAND 1	*1 BAND INPUT	H	—
P2-2	39	BAND 2		H	—
P2-3	38	AUTO/MANUAL	AT/MA INPUT/OUTPUT		
		LOCK KEY	INPUT	H	—
		CYCLIC KEY	OUTPUT	H	L
P2-4	37	FM MUT	F1 INPUT/OUTPUT		
		LOCK KEY	INPUT	H	—
		CYCLIC KEY	OUTPUT	H	L
P3-1	36	TUNED & SD	TUNED & SD INPUT	L	—
P3-2	35	STEREO	STEREO INPUT	L	—

*1	BAND 2	BAND 1	BAND
	L	H	FM
	H	L	MW
	H	H	LW

#### TC9172P

PORT	NO.	NAME	FUNCTION	ACTIVE	FIRST SETTING
OT 1	06	FM	FM BAND OUTPUT	H	H
OT 2	07	AM (MW, LW)	LW, MW OUTPUT	H	L
OT 3	08	MW	MW BAND OUTPUT	H	L
OT 4	09	LW	LW BAND OUTPUT	H	L

## C BLOCK DIAGRAM

### Function of terminals

Pin No.	Symbol	Name	Function
22 54	COM1 COM2	LCD common output	These are output terminals for common signal to LCD. It is possible to display maximum 54 segment at matrix of S1 — S27. Three levels of VDD, 1/2VDD and GND at 5ms intervals is output with 50Hz cycle from these terminals.
55 ~ 60 1 ~ 21	S <sub>1</sub> ~ S <sub>6</sub> S <sub>7</sub> ~ S <sub>27</sub>	LCD segment output	These are output terminals of segment signal. It is possible to display maximum 54 segment of matrix of CCM1 and CCM2.
24 ~ 27	K <sub>0</sub> ~ K <sub>3</sub>	Key input port	These are 4-bit input port for key matrix input. All these terminals have pull down resistor themselves. Usually, T <sub>0</sub> ~ T <sub>7</sub> output ports are used for key return timing signal output.
28 ~ 34	T <sub>0</sub> ~ T <sub>6</sub>	Key timing output port	These are output ports for 4-bit (T <sub>0</sub> ~ T <sub>3</sub> ) and 3-bit (T <sub>4</sub> ~ T <sub>6</sub> ). Usually, these are used for key return timing signal output of key matrix.
35 36	P3-2 /A/D.IN P3-1 /DC. REF	I/O port 3 A—D /analogue voltage input /standard voltage input	These are I/O ports of 2-bit. The port can designate output and input at every 1 bit and the designation can be made depend on contents of inner port called PORT-3 I/O CONTROL. Also, these terminals are used for analogue input of built-in 4-bit A/D converter. Change control to A/D converter input is made depend on contents of PORT-3 I/O CONTROL port. Built-in A/D converter is controlled by program of random comparison system, P3-1 is for standard voltage input and P3-2 is for analogue compare input.
37 ~ 40	P2-4 P2-1	I/O port-2	These terminals are 4-bit I/O ports. The port can designate the output and input at every 1 bit and designation can be made depend on contents of inner port called PORT-2 I/O CONTROL.
41	MUTE	Muting signal output port	This terminal is for 1 bit output port and usually used for muting control signal output. Note: When $\overline{\text{INH}}$ input is changing "H" to "L" or "L" to "H" alternately, output will automatically be set to "H" level.
42 43 44 45	STB CK SO SI	Strobing pulse output Serial clock output Serial data output Serial data input	These terminals are for serial interface. It can control an external PLL LSI or optional IC by SIO command. Serial transmission mode of $\overline{\text{NCD}}$ /NCD can be selected by the program.
46	REF	Reference Frequency Signal output	This is output terminal for standard frequency signal to PLL LSI. Eight kind of 1kHz, 5kHz, 9kHz, 10kHz, 12.5kHz, 25kHz, 50kHz and 100kHz standard frequency signal can be selected by the program. Note: When $\overline{\text{INH}}$ is in "L" level, output is automatically fixed to "L" level.
47	$\overline{\text{INT}}$	Initialize input	This is input terminal for system reset signal of device. When $\overline{\text{INT}}$ is in "L" level, device will be reset. When INT are "H" level, program starts from "0". This terminal is used in "H" level setting because usually, when 0V → 4.5V voltage is applied to VDD, device will be reset (power on reset). Note: After system reset, I/O port is set to input mode but output port is instable, therefore, initialize the program depend on condition if needed.

## IC BLOCK DIAGRAM

Pin No.	Symbol	Name	Function
48	$\overline{\text{INH}}$	Inhibit input	This is input port for signal selection of radio mode. It judges "radio on" by "H" level input and "radio off" by "L" level input. When this terminal is in "L" level, reference output is automatically fixed to "L" level.
49	TEST	Test mode control input	This is input terminal for test mode control. It becomes test mode at "H" level and normal mode at "L" level or NC condition. This terminal has pull down resistor itself and usually it is set to NC or "L" level.
50 51	X <sub>T</sub> X <sub>T</sub>	X'tal OSC terminal	This is connection terminal for X'tal. Connect 7.2MHz X'tal to this terminal.
52	GND	GND terminal	This is ground terminal of device.
23 53	V <sub>DD</sub>	Power supply terminal	These are terminals for V <sub>DD</sub> . Usually applies 5V ± 10% to this terminals. Voltage can be reduced to 2V for back up condition. Also, when 0V → 4.5V is applied to these terminals, device will be in system reset and program start from "0". Note: Make power on reset at the "L" level (= $\overline{\text{INH}}$ ) condition.

## PARTS LIST

### PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol  $\Delta$  in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with  $\Delta$ , use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.

Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

### NOTE:

\* Materials of Capacitors are abbreviated as follows;

AL ELECT ..... Aluminum Electrolytic  
BC CON ..... Semiconductor Ceramic  
CHIP BC ..... Chip Semiconductor Ceramic  
CHIP TAN ..... Chip Tantal  
ELECT ..... Electrolytic  
PP CON ..... Polypropylene

\* Tolerance of Capacitors are noted with following symbols;

J .....  $\pm 5\%$       P ..... +100-0%  
K .....  $\pm 10\%$       Q ..... +30-10%  
M .....  $\pm 20\%$       Z ..... +80-20%  
N .....  $\pm 30\%$

### PACKING & ACCESSORIES

Ref. No.	Part No.	Description
	141-6-133T-86101	INNER CORR CASE (EUROPE)
	141-6-133T-86104	INNER CORR CASE (ITALY)
	141-6-133T-86105	INNER CORR CASE (W.GERMANY)
	141-6-144T-89000	FOAM PLASTIC CASE, LEFT
	141-6-144T-89100	FOAM PLASTIC CASE, RIGHT
	141-6-235T-50601	INNER POLYE
		LAMINA COVER 500X600
	141-6-235T-50605	INNER POLE
		LAMINA COVER 500X600
	141-6-409T-39600	INST MANUAL (EUROPE)
	141-6-409T-39602	INST MANUAL (ITALY)
	141-6-409T-39603	INST MANUAL (W.GERMANY)
	141-6-415T-43800	NOTICE, ZZF (W.GERMANY)
	141-6-231T-20300	INNER POLYE COVER
	4-245T-00700	ANTENNA, FM

Ref. No.	Part No.	Description
23	141-2-329T-10600	REFLECTOR, LCD
24	141-2-247T-63900	SHEET, LCD
25	141-2-247T-66400	SHEET, LCD
26	141-2-310T-47000	BRACKET, HEAT SINK
27	141-2-290T-02300	BRACKET, PHONO PCB MTG
28	141-2-448T-36900	CUSHION 35X20X2
29	123-2-472R-00401	LUG (W.GERMANY)
Y1	BJB2S++3+8+Z1	BIND HD 2 TAPPING SCREW 3X8
Y2	141-2-421T-24700	SPECIAL SCREW
Y3	BJX6S++3+8+Z1	PAN WASHER HD 2
		TAPPING SCREW 3X8
Y4	BJESS++4+8+Z1	BIND HD S TITE SCREW 4X8
Y5	BJESS++3+6+Z1	BIND HD S TITE SCREW 3X6
Y6	141-2-421T-43931	SPECIAL SCREW (W.GERMANY)
Y7	BJB2S++3+8+ZK	BIND HD 2 TAPPING SCREW 3X8
Y8	BJS2S2R6+8+Z1	FLAT HD 2 TAPPING SCREW 2.6X8

### CABINET & CHASSIS

Ref. No.	Part No.	Description
1	141-0-122T-66400	FRONT PANEL ASSY (W.GERMANY/EUROPE)
	141-0-122T-66403	FRONT PANEL ASSY (ITALY)
2	141-2-111T-55541	CABINET
3	141-2-164T-37700	SLIDE KNOB, VOLUME, LEFT
4	141-2-164T-37800	SLIDE KNOB, VOLUME, RIGHT
5	141-2-164T-36204	SLIDE KNOB, EQUALIZER
6	141-0-125T-33406	BOTTOM LID ASSY (W.GERMANY/EUROPE)
	141-0-125T-33407	BOTTOM LID ASSY (ITALY)
7	141-2-310T-75001	BRACKET, HEAD SINK, FRONT
8	141-2-310T-75101	BRACKET, HEAD SINK, REAR
9	141-2-160T-38900	PUSH BUTTON, POWER SWITCH
10	141-2-160T-09701	PUSH BUTTON, SPEAKER
11	141-2-160T-09701	PUSH BUTTON, LOUD/MUTE
12	141-2-160T-57401	PUSH BUTTON, FUNCTION
13	141-2-160T-59901	PUSH BUTTON, BAND
14	141-2-160T-81900	PUSH BUTTON, TUNING
15	141-2-464T-14400	FIXER
16	141-2-119T-05800	BACK PANEL (EUROPE)
	141-2-119T-05803	BACK PANEL (ITALY)
	141-2-119T-05805	BACK PANEL (W.GERMANY)
17	141-2-210T-71200	BRACKET, CONNECTOR, LARGE
18	141-2-210T-71300	BRACKET, CONNECTOR, SMALL
19	141-2-310T-77100	BRACKET, FUNCTION PCB
20	141-2-310T-97401	BRACKET, IC MTG
21	141-2-210T-70801	BRACKET, ANTENNA
22	141-2-210T-78800	BRACKET, LCD

### ELECTRICAL PARTS

Ref. No.	Part No.	Description
67	$\Delta$ 4-320T-21900	POWER TRANSFORMER (W.GERMANY/EUROPE)
	$\Delta$ 4-320T-22700	POWER TRANSFORMER (ITALY)
68	$\Delta$ 4-243T-84973	AC POWER CORD
69	$\Delta$ 4-234T-11084	FUSE 250V 1.0A SEMUKO (F999)
70	$\Delta$ 4-234T-11089	FUSE 250V 2.5A
		SEMUKO (F751/F851)
71	4-237T-09990	TERMINAL BOARD SPEAKER (EUROPE)
	4-237T-09993	TERMINAL BOARD SPEAKER (W.GERMANY)
72	141-2-368T-30701	HEAT SINK
73	4-290T-16600	P.C BOARD, PT. PRIMARY
74	4-290T-16700	P.C BOARD, INSULATOR
75	4-269T-00101	LOOP ANT ASSY (W.GERMANY/EUROPE)
	4-269T-00104	LOOP ANT ASSY (ITALY)
76	141-2-322T-87201	SHIELD PLATE
	4-267T-17173	SOCKET, 3P
	4-267T-17175	SOCKET, 5P
	4-267T-17177	SOCKET, 7P
	4-267T-17178	SOCKET, 8P
	4-240T-83572	SOCKET, 2P
	4-240T-83573	SOCKET, 3P
	4-240T-83574	SOCKET, 4P
	4-240T-83577	SOCKET, 7P
	4-240T-47673	SOCKET, 3P

# PARTS LIST

## MAIN PCB ASSY

Ref. No.	Part No.	Description
50	141-4-290T-15300 141-4-290T-15301 141-4-290T-15302	P.C BOARD ASSY, MAIN (EUROPE) P.C BOARD ASSY, MAIN (ITALY) P.C BOARD ASSY, MAIN (W.GERMANY)
L751	4-265T-07930	VHF COIL
L851	4-265T-07930	VHF COIL
IC751	4-206T-05100	I.C STK4152MK2
Q921	△ STD438+F+++++	TR 2SD438 F
Q922	△ STB560+F+++++	TR 2SB560 F
D901	△ SDGP15+LD++++	DIODE GP15 D L FORMING
D902	△ SDGP15+LD++++	DIODE GP15 D L FORMING
D903	△ SDGP15+LD++++	DIODE GP15 D L FORMING
D904	△ SDGP15+LD++++	DIODE GP15 D L FORMING
D921	SDMTZ150B+++T	ZENER DIODE MTZ15.0B
D922	SDMTZ150B+++T	ZENER DIODE MTZ15.0B
C751	CE+50105MR++F	ELECT 1MF 50V M R
C752	CC+50181KRSLF	CERAMIC 180PF 50V K R SL
C753	CE6R3107MR++F	ELECT 100MF 6.3V M R
C754	CE+50476MR++F	ELECT 47MF 50V M R
C755	CM+50473MR++F	MYLAR 0.047MF 50V M R
C756	401 024 6443	CERAMIC 100PF 50V K R SL (W.GERMANY)
C851	CE+50105MR++F	ELECT 1MF 50V M R
C852	CC+50181KRSLF	CERAMIC 180PF 50V K R SL
C853	CE6R3107MR++F	ELECT 100MF 6.3V M R
C854	CE+50476MR++F	ELECT 47MF 50V M R
C855	CM+50473MR++F	MYLAR 0.047MF 50V M R
C856	CC+50101KRSLF	CERAMIC 100PF 50V K R SL (W.GERMANY)
C901	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF
C902	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF
C903	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF
C904	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF
C905	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF
C906	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF
C907	4-163T-12400	ELECT 3300MF 50V
C908	4-163T-12400	ELECT 3300MF 50V
C911	CE+50107MY++S	ELECT 100MF 50V M Y
C912	CE+50107MY++S	ELECT 100MF 50V M Y
C921	CE+16227MY++S	ELECT 220MF 16V M Y
C922	CE+16227MY++S	ELECT 220MF 16V M Y
C950	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF (W.GERMANY)
R751	401 024 7044	CARBON 1K JA 1/6W
R752	401 024 7747	CARBON 100K JA 1/6W
R753	401 027 5948	CARBON 68K JA 1/6W
R754	401 027 2343	CARBON 560 JA 1/6W
R755	401 022 4164	CARBON 68K JA 1/4W
R756	401 016 3869	CARBON 2.2K JA 1/4W
R757	401 008 7204	CARBON 2.2K JB 1/2W
R758	401 006 9002	CARBON 10 JB 1/2W
R759	△ 401 010 5601	CARBON 5.6 JB 1/2W
R851	401 024 7044	CARBON 1K JA 1/6W
R852	401 024 7747	CARBON 100K JA 1/6W
R853	401 027 5948	CARBON 68K JA 1/6W
R854	401 027 2343	CARBON 560 JA 1/6W
R855	401 022 4164	CARBON 68K JA 1/4W
R856	401 016 3869	CARBON 2.2K JA 1/4W
R857	401 008 7204	CARBON 2.2K JB 1/2W
R858	401 006 9002	CARBON 10 JB 1/2W
R859	△ 401 010 5601	CARBON 5.6 JB 1/2W
R911	△ 401 012 4206	CARBON 100 JB 1/4W
R912	401 012 4206	CARBON 100 JB 1/4W
R913	401 019 1961	CARBON 3.9K JA 1/4W
R914	401 012 5768	CARBON 1K JA 1/4W
R921	401 061 2505	OXIDE-MT 330 JA 1W
R922	△ 401 061 2505	OXIDE-MT 330 JA 1W
R923	△ 401 018 3877	CARBON 3.3K JA 1/4W
R924	401 018 3877	CARBON 3.3K JA 1/4W
R941	401 024 6443	CARBON 10 JA 1/6W (W.GERMANY)

## FUNCTION SWITCH PCB ASSY

Ref. No.	Part No.	Description
51	141-4-290T-15400	P.C BOARD ASSY, FUNCTION SWITCH (EUROPE)
	141-4-290T-15401	P.C BOARD ASSY, FUNCTION SWITCH (ITALY)
	141-4-290T-15402	P.C BOARD ASSY, FUNCTION SWITCH (W.GERMANY)
77	4-267T-41471	SOCKET W/LEAD, DECK
	4-267T-25173	SOCKET, 3P
	4-236T-32375	PLUG, TUNER
	4-248T-28071	SWITCH, FUNCTION
S1~4	4-248T-28100	SWITCH, MUTE/LOUD
S5,6		IC LA6458S SIP9
IC721	SILA6458S++++	IC LA6458S SIP9
Q730	STC536+G+++UB	TR 2SC536 G AUD B SP
Q731	STC536+G+++UB	TR 2SC536 G AUD B SP
Q732	STC536+G+++UB	TR 2SC536 G AUD B SP
Q733	STC536+G+++UB	TR 2SC536 G AUD B SP
Q734	STC536+G+++UB	TR 2SC536 G AUD B SP
Q830	STC536+G+++UB	TR 2SC536 G AUD B SP
Q831	STC536+G+++UB	TR 2SC536 G AUD B SP
Q832	STC536+G+++UB	TR 2SC536 G AUD B SP
Q833	STC536+G+++UB	TR 2SC536 G AUD B SP
Q834	STC536+G+++UB	TR 2SC536 G AUD B SP
C712	CC+50101KRSLF	CERAMIC 100PF 50V K R SL (W.GERMANY)
C713	CC+50101KRSLF	CERAMIC 100PF 50V K R SL (W.GERMANY)
C721	CC+50331KRSLF	CERAMIC 330PF 50V K R SL
C722	CC+50101KRSLF	CERAMIC 100PF 50V K R SL
C723	CE+16106MR++F	ELECT 10MF 16V M R
C724	CC+50561KRSLF	CERAMIC 560PF 50V K R SL
C725	CB+25104KRXRF	BC CON 0.1MF 25V K R XR
C726	CC+50101KRSLF	CERAMIC 100PF 50V K R SL (W.GERMANY)
C730	CE+50225MR++F	ELECT 2.2MF 50V M R
C731	CF+50104JR++F	METAL POLY 0.1MF 50V J R
C732	CE+50474MR++F	ELECT 0.47MF 50V M R
C733	CB+25223KRXRF	BC CON 0.022MF 25V K R XR
C734	CF+50124JR++F	METAL POLY 0.12MF 50V J R
C735	CB+25682KRXRF	BC CON 0.0068MF 25V K R XR
C736	CB+25333KRXRF	BC CON 0.033MF 25V K R XR
C737	CB+25152KRXRF	BC CON 0.0015MF 25V K R XR
C738	CB+25822KRXRF	BC CON 0.0082MF 25V K R XR
C739	CC+50331KRSLF	CERAMIC 330PF 50V K R SL
C812	CC+50101KRSLF	CERAMIC 100PF 50V K R SL (W.GERMANY)
C813	CC+50101KRSLF	CERAMIC 100PF 50V K R SL (W.GERMANY)
C821	CC+50331KRSLF	CERAMIC 330PF 50V K R SL
C822	CC+50101KRSLF	CERAMIC 100PF 50V K R SL
C823	CE+16106MR++F	ELECT 10MF 16V M R
C824	CC+50561KRSLF	CERAMIC 560PF 50V K R SL
C825	CB+25104KRXRF	BC CON 0.1MF 25V K R XR
C826	CC+50101KRSLF	CERAMIC 100PF 50V K R SL (W.GERMANY)
C830	CE+50225MR++F	ELECT 2.2MF 50V M R
C831	CF+50104JR++F	METAL POLY 0.1MF 50V J R
C832	CE+50474MR++F	ELECT 0.47MF 50V M R
C833	CB+25223KRXRF	BC CON 0.022MF 25V K R XR
C834	CF+50124JR++F	METAL POLY 0.12MF 50V J R
C835	CB+25682KRXRF	BC CON 0.0068MF 25V K R XR
C836	CB+25333KRXRF	BC CON 0.033MF 25V K R XR
C837	CB+25152KRXRF	BC CON 0.0015MF 25V K R XR
C838	CB+25822KRXRF	BC CON 0.0082MF 25V K R XR
C839	CC+50331KRSLF	CERAMIC 330PF 50V K R SL
C923	CE+16476MR++F	ELECT 47MF 16V M R
C924	CE+16476MR++F	ELECT 47MF 16V M R
C937	CB+25104KRXRF	BC CON 0.1MF 25V K R XR
C946	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF (W.GERMANY)
C947	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF (W.GERMANY)
C948	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF (W.GERMANY)

# PARTS LIST

Ref. No.	Part No.	Description
R712	401 012 5768	CARBON 1K JA 1/4W (W.GERMANY)
R713	401 012 5768	CARBON 1K JA 1/4W (W.GERMANY)
R721	401 025 7845	CARBON 2.2K JA 1/6W
R722	401 027 0349	CARBON 47K JA 1/6W
R723	401 025 7845	CARBON 2.2K JA 1/6W
R724	401 025 7845	CARBON 2.2K JA 1/6W
R725	401 027 0349	CARBON 47K JA 1/6W
R726	401 027 2640	CARBON 5.6K JA 1/6W
R727	401 026 4645	CARBON 33K JA 1/6W
R728	401 024 8041	CARBON 1M JA 1/6W
R729	401 027 2640	CARBON 5.6K JA 1/6W
R730	401 027 2343	CARBON 560 JA 1/6W
R731	401 027 5948	CARBON 68K JA 1/6W
R732	401 027 2640	CARBON 5.6K JA 1/6W
R733	401 026 6649	CARBON 390 JA 1/6W
R734	401 027 2343	CARBON 560 JA 1/6W
R735	401 027 5948	CARBON 68K JA 1/6W
R736	401 027 2640	CARBON 5.6K JA 1/6W
R737	401 026 6649	CARBON 390 JA 1/6W
R738	401 027 2343	CARBON 560 JA 1/6W
R739	401 027 5948	CARBON 68K JA 1/6W
R740	401 027 2640	CARBON 5.6K JA 1/6W
R741	401 026 6649	CARBON 390 JA 1/6W
R742	401 027 2343	CARBON 560 JA 1/6W
R743	401 027 5948	CARBON 68K JA 1/6W
R744	401 027 2640	CARBON 5.6K JA 1/6W
R745	401 026 6649	CARBON 390 JA 1/6W
R746	401 027 2343	CARBON 560 JA 1/6W
R747	401 027 5948	CARBON 68K JA 1/6W
R748	401 027 2640	CARBON 5.6K JA 1/6W
R749	401 026 6649	CARBON 390 JA 1/6W
R812	401 012 5768	CARBON 1K JA 1/4W (W.GERMANY)
R813	401 012 5768	CARBON 1K JA 1/4W (W.GERMANY)
R821	401 025 7845	CARBON 2.2K JA 1/6W
R822	401 027 0349	CARBON 47K JA 1/6W
R823	401 025 7845	CARBON 2.2K JA 1/6W
R824	401 025 7845	CARBON 2.2K JA 1/6W
R825	401 027 0349	CARBON 47K JA 1/6W
R826	401 027 2640	CARBON 5.6K JA 1/6W
R827	401 026 4645	CARBON 33K JA 1/6W
R828	401 024 8041	CARBON 1M JA 1/6W
R829	401 027 2640	CARBON 5.6K JA 1/6W
R830	401 027 2343	CARBON 560 JA 1/6W
R831	401 027 5948	CARBON 68K JA 1/6W
R832	401 027 2640	CARBON 5.6K JA 1/6W
R833	401 026 6649	CARBON 390 JA 1/6W
R834	401 027 2343	CARBON 560 JA 1/6W
R835	401 027 5948	CARBON 68K JA 1/6W
R836	401 027 2640	CARBON 5.6K JA 1/6W
R837	401 026 6649	CARBON 390 JA 1/6W
R838	401 027 2343	CARBON 560 JA 1/6W
R839	401 027 5948	CARBON 68K JA 1/6W
R840	401 027 2640	CARBON 5.6K JA 1/6W
R841	401 026 6649	CARBON 390 JA 1/6W
R842	401 027 2343	CARBON 560 JA 1/6W
R843	401 027 5948	CARBON 68K JA 1/6W
R844	401 027 2640	CARBON 5.6K JA 1/6W
R845	401 026 6649	CARBON 390 JA 1/6W
R846	401 027 2343	CARBON 560 JA 1/6W
R847	401 027 5948	CARBON 68K JA 1/6W
R848	401 027 2640	CARBON 5.6K JA 1/6W
R849	401 026 6649	CARBON 390 JA 1/6W
R932	401 022 1955	CARBON 680 JA 1/4W
R933	401 013 5361	CARBON 1.2K JA 1/4W

## LED PCB ASSY

Ref. No.	Part No.	Description
52	141-4-290T-15500	P.C BOARD ASSY, LED (EUROPE)
	141-4-290T-15501	P.C BOARD ASSY, LED (ITALY)
	141-4-290T-15502	P.C BOARD ASSY, LED (W.GERMANY)
D915	SLSLP238FB5PG	LED SLP238F-51P B GR, TUNER
D936	SLSLP238FB5PG	LED SLP238F-51P B GR, PHONO
D937	SLSLP238FB5PG	LED SLP238F-51P B GR, CD
D938	SLSLP138CB5RE	LED SLP138C-51 B RE, TAPE

## VOLUME PCB ASSY

Ref. No.	Part No.	Description
53	141-4-290T-15600	P.C BOARD ASSY, VOLUME (EUROPE)
	141-4-290T-15601	P.C BOARD ASSY, VOLUME (ITALY)
	141-4-290T-15602	P.C BOARD ASSY, VOLUME (W.GERMANY)
	4-267T-25177	SOCKET, 7P
VR721	4-220T-17171	VARIABLE RESISITOR, 100KB, VOLUME
VR821	4-220T-17171	VARIABLE RESISITOR, 100KB, VOLUME

## SPEAKER TERMINAL PCB ASSY

Ref. No.	Part No.	Description
54	141-4-290T-15700	P.C BOARD ASSY, SPKR TERMINAL (EUROPE)
	141-4-290T-15701	P.C BOARD ASSY, SPKR TERMINAL (ITALY)
	141-4-290T-15702	P.C BOARD ASSY, SPKR TERMINAL (W.GERMANY)
C762	CM+50562MR++F	MYLAR 0.0056MF 50V M R (W.GERMANY)
C763	CM+50562MR++F	MYLAR 0.0056MF 50V M R (W.GERMANY)
C862	CM+50562MR++F	MYLAR 0.0056MF 50V M R (W.GERMANY)
C863	CM+50562MR++F	MYLAR 0.0056MF 50V M R (W.GERMANY)
R762	401 012 3467	CARBON 10 JA 1/4W (W.GERMANY)
R862	401 012 3467	CARBON 10 JA 1/4W (W.GERMANY)

## PHONO PCB ASSY

Ref. No.	Part No.	Description
55	141-4-290T-15800	P.C BOARD ASSY, PHONO (EUROPE)
	141-4-290T-15801	P.C BOARD ASSY, PHONO (ITALY)
	141-4-290T-15802	P.C BOARD ASSY, PHONO (W.GERMANY)
	4-240T-50300	SOCKET, CD
	4-240T-30372	SOCKET, PHONO
	4-267T-19800	SOCKET, CD SYN
	4-236T-17900	PLUG, 3P
	4-267T-25175	SOCKET, 5P
	4-267T-25177	SOCKET, 7P
IC701	SILA6458DS+++	IC LA6458DS DIP08
C701	CE+25475RVLRS	ELECT 4.7MF 25V R V LR
C702	CC+50221KRSLF	CERAMIC 220PF 50V K R SL
C703	CC+50821KRYBF	CERAMIC 820PF 50V K R YB
C704	CE+10336MR++F	ELECT 33MF 10V M R
C705	CB+25472KRXRF	BC CON 0.0047MF 25V K R XR
C706	CB+25183KRXRF	BC CON 0.018MF 25V K R XR



## PARTS LIST

Ref. No.	Part No.	Description
C707 C711	CW+50105QVNP CC+50331KRSLF	NONPOLAR 1MF 50V Q V NP CERAMIC 330PF 50V K R SL (W.GERMANY)
C801	CE+25475RVLR	ELECT 4.7MF 25V R V LR
C802	CC+50221KRSLF	CERAMIC 220PF 50V K R SL
C803	CC+50821KRYBF	CERAMIC 820PF 50V K R YB
C804	CE+10336MR++F	ELECT 33MF 10V M R
C805	CB+25472KRXR	BC CON 0.0047MF 25V K R XR
C806	CB+25183KRXR	BC CON 0.018MF 25V K R XR
C807	CW+50105QVNP	NONPOLAR 1MF 50V Q V NP
C811	CC+50331KRSLF	CERAMIC 330PF 50V K R SL (W.GERMANY)
C925	CE+16476MR++F	ELECT 47MF 16V M R
C926	CE+16476MR++F	ELECT 47MF 16V M R
C927	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF
C928	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF
C941	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF (W.GERMANY)
C942	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF (W.GERMANY)
C943	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF (W.GERMANY)
C944	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF (W.GERMANY)
C945	CC+50101KRSLF	CERAMIC 100PF 50V K R SL (W.GERMANY)
R701	401 024 7044	CARBON 1K JA 1/6W
R702	401 027 0349	CARBON 47K JA 1/6W
R703	401 026 3945	CARBON 330 JA 1/6W
R704	401 025 1942	CARBON 15K JA 1/6W
R705	401 026 1644	CARBON 270K JA 1/6W
R706	401 027 2343	CARBON 560 JA 1/6W
R707	401 024 7747	CARBON 100K JA 1/6W
R711	401 024 7044	CARBON 1K JA 1/6W (W.GERMANY)
R801	401 024 7044	CARBON 1K JA 1/6W
R802	401 027 0349	CARBON 47K JA 1/6W
R803	401 026 3945	CARBON 330 JA 1/6W
R804	401 025 1942	CARBON 15K JA 1/6W
R805	401 026 1644	CARBON 270K JA 1/6W
R806	401 027 2343	CARBON 560 JA 1/6W
R807	401 024 7747	CARBON 100K JA 1/6W
R811	401 024 7044	CARBON 1K JA 1/6W (W.GERMANY)
R934	401 024 7450	CARBON 10K JA 1/6W

### POWER SWITCH PCB ASSY

Ref. No.	Part No.	Description
56	141-4-290T-15900	P.C BOARD ASSY, POWER SWITCH (EUROPE)
	141-4-290T-15901	P.C BOARD ASSY, POWER SWITCH (ITALY)
	141-4-290T-15902	P.C BOARD ASSY, POWER SWITCH (W.GERMANY)
	141-2-382T-18900	TERMINAL
	141-2-381T-04202	BRACKET, FUSE
S8	△ 4-238T-70380	SWITCH, POWER
C999	△ 4-223T-12100	CAPACITOR 0.01MF 400V
or	△ 4-223T-12280	CAPACITOR 0.01MF SEMKO

### SPEAKER SWITCH PCB ASSY

Ref. No.	Part No.	Description
57	141-4-290T-16000	P.C BOARD ASSY, SPKR SWITCH (EUROPE)
	141-4-290T-16001	P.C BOARD ASSY, SPKR SWITCH (ITALY)

Ref. No.	Part No.	Description
57	141-4-290T-16002	P.C BOARD ASSY, SPKR SWITCH (W.GERMANY)
	141-2-381T-04202	BRACKET, FUSE
S7	4-238T-82200	SWITCH, SPEAKER
R761	401 009 5506	CARBON 330 JB 1/2W
R861	401 009 5506	CARBON 330 JB 1/2W

### HEADPHONE SOCKET PCB ASSY

Ref. No.	Part No.	Description
58	141-4-290T-16100	P.C BOARD ASSY, HEAD PHONE SOCKET (EUROPE)
	141-4-290T-16101	P.C BOARD ASSY, HEAD PHONE SOCKET (ITALY)
	141-4-290T-16102	P.C BOARD ASSY, HEAD PHONE SOCKET (W.GERMANY)
	4-240T-63071	SOCKET, HEADPHONE
C761	CC+50221KRSLF	CERAMIC 220PF 50V K R SL (W.GERMANY)
C861	CC+50221KRSLF	CERAMIC 220PF 50V K R SL (W.GERMANY)

### GRAPHIC EQUALIZER PCB ASSY

Ref. No.	Part No.	Description
59	141-4-290T-16200	P.C BOARD ASSY, G. EQ.(EUROPE)
	141-4-290T-16201	P.C BOARD ASSY, G. EQ.(ITALY)
	141-4-290T-16202	P.C BOARD ASSY, G. EQ.(W.GERMANY)
VR731,831	4-220T-42000	VARIABLE RESISTOR, 250KW, 16KHZ
VR732,832	4-220T-42000	VARIABLE RESISTOR, 250KW, 4KHZ
VR733,833	4-220T-42000	VARIABLE RESISTOR, 250KW, 1KHZ
VR734,834	4-220T-42000	VARIABLE RESISTOR, 250KW, 250HZ
VR735,835	4-220T-42000	VARIABLE RESISTOR, 250KW, 63HZ
R941	401 024 6443	CARBON 10 JA 1/6W (W.GERMANY)
R942	401 024 6443	CARBON 10 JA 1/6W (EUROPE)

### P.T. SECONDARY PCB ASSY

Ref. No.	Part No.	Description
60	141-4-290T-16300	P.C BOARD ASSY, P.T. SECONDARY (EUROPE)
	141-4-290T-16301	P.C BOARD ASSY, P.T. SECONDARY (ITALY)
	141-4-290T-16302	P.C BOARD ASSY, P.T. SECONDARY (W.GERMANY)
D931	△ SDDSF10+C+++T	DIODE DSF10 C T
D932	△ SDDSF10+C+++T	DIODE DSF10 C T
D933	△ SDDSF10+C+++T	DIODE DSF10 C T
D934	△ SDDSF10+C+++T	DIODE DSF10 C T
C931	CF+50104JR++F	METAL POLY 0.1MF 50V J R
C932	CE+35228MVHAS	ELECT 2200MF 35V M V HA S
C949	CC+50103ZRZFF	CERAMIC 0.01MF 50V Z R ZF (W.GERMANY)
R931	401 057 4100	OXIDE-MT 0.33 JA 1W

### DC DECK PCB ASSY

Ref. No.	Part No.	Description
61	141-4-290T-16400	P.C BOARD ASSY, DC DECK (EUROPE)

## PARTS LIST

Ref. No.	Part No.	Description
61	141-4-290T-16401	P.C BOARD ASSY, DC DECK (ITALY)
	141-4-290T-16402	P.C BOARD ASSY, DC DECK (W.GERMANY)
	4-267T-25173	SOCKET, 3P
IC931	△ SI AN7812F++++	IC AN7812F SIP3
C933	CE+50105MR++F	ELECT 1MF 50V M R
C934	CE+16106MR++F	ELECT 10MF 16V M R

### DC TUNER PCB ASSY

Ref. No.	Part No.	Description
62	141-4-290T-16500	P.C BOARD ASSY, DC TUNER (EUROPE)
	141-4-290T-16501	P.C BOARD ASSY, DC TUNER (ITALY)
	141-4-290T-16502	P.C BOARD ASSY, DC TUNER (W.GERMANY)
IC932	△ 1A1N7812F+++	IC AN7812F SIP3
C935	CE+50105MR++F	ELECT 1MF 50V M R
C936	CE+16106MR++F	ELECT 10MF 16V M R

**TUNER MAIN PCB ASS**

Ref. No.	Part No.	Description
63	141-4-290T-07401	P.C BOARD ASSY, TUNER MAIN (EUROPE)
	141-4-290T-07404	P.C BOARD ASSY, TUNER MAIN (ITALY)
	141-4-290T-07405	P.C BOARD ASSY, TUNER MAIN (W.GERMANY)
	4-970T-02571	LCD
	141-2-382T-22700	TERMINAL, EXT.ANT
	4-240T-83575	SOCKET, 5P, TO AMP
	4-267T-41100	SOCKET, 5P, TO AMP
	4-267T-17176	SOCKET, 6P, TO RESET
	4-267T-17177	SOCKET, 7P, TO BAND
	141-2-322T-87100	SHIELD PLATE, CASE
	141-2-322T-42000	SHIELD PLATE, BACK
	4-267T-17172	SOCKET, 2P, TO LAMP
CV101	SCSVC211B+++1	VARACTOR DIODE SVC211B SP
CV102	SCSVC211B+++1	VARACTOR DIODE SVC211B SP
CV103	SCSVC211B+++1	VARACTOR DIODE SVC211B SP
CV151	SCKV1260B+++	VARACTOR DIODE KV1260B
CT101	4-224R-11600	TRIMMER
CT151	4-224T-15500	TRIMMER (W.GERMANY/EUROPE)
or	4-224T-15571	TRIMMER
CT152	4-224T-15400	TRIMMER (W.GERMANY/EUROPE)
or	4-224T-15471	TRIMMER
CT153	4-224T-15500	TRIMMER (W.GERMANY/EUROPE)
or	4-224T-15571	TRIMMER
CT154	4-224T-15400	TRIMMER (W.GERMANY/EUROPE)
or	4-224T-15471	TRIMMER
T201	4-256T-35040	I.F.T
T202	4-256T-39040	I.F.T
T251	4-256T-41740	I.F.T
L101	4-265T-02700	VHF COIL
L102	4-265T-58830	VHF COIL
L103	4-265T-65240	V.H.F COIL
L104	4-253T-15012	FILTER
L105	4-265T-57244	VHF COIL
L151	4-257T-76600	ANT COIL
L152	4-257T-76700	ANT COIL
L153	4-258T-44640	O.S.C COIL
L154	4-258T-58340	O.S.C COIL
L201	4-253T-15044	FILTER
L401	4-253T-15020	FILTER
L402	4-253T-15020	FILTER
CF201	4-256T-84500	I.F FILTER

Ref. No.	Part No.	Description
CF202	4-256T-84500	I.F. FILTER
CF203	4-256T-84500	I.F. FILTER
CF251	4-256T-89471	I.F. FILTER
CF252	4-256T-90100	I.F. FILTER
BPF101	4-253T-20040	FILTER
LPF201	4-255T-06146	MX COIL
X401	4-225T-06200	CRYSTAL
SVR201	4-220T-19476	SEMI-FIXED RESISTOR,

or  
SVR202

or  
SVR301

or  
SVR302

or  
F301:

F302	4-237T-13300	CHOKE
TP201	4-237T-09000	TERMINAL BOARD
TP202	4-237T-09000	TERMINAL BOARD
TP203	4-237T-09000	TERMINAL BOARD
TP301	4-237T-09000	TERMINAL BOARD
TP401	4-237T-09000	TERMINAL BOARD
IC201	SILA1265S++++	IC LA1265S DIP22
IC301	SILA3361++++	IC LA3361
IC401	SITC9172P+++	IC TC9172P DIP16
IC402	SITC9302AF019	IC TC9302AF-019 QIP60
Q101	SF2K212++++F++	FET 2SK212 F
Q102	STC2999E++++T	TR 2SC2999 E T
Q103	STC930D++++C1	TR 2SC930 D CONV SP
Q104	STC2999E++++T	TR 2SC2999 E T
Q105	SF2K212++++F++	FET 2SK212 F
Q151	SF2K222++++E++	FET 2SK222 E
Q152	STD1012G++++T	TR 2SD1012 G T
Q153	STD1012G++++T	TR 2SD1012 G T
Q154	STD1012G++++T	TR 2SD1012 G T
Q155	STD1012G++++T	TR 2SD1012 G T
Q156	STD1012G++++T	TR 2SD1012 G T
Q157	STC536G+++UB	TR 2SC536 G AUD B SP
Q201	STC930E++++F1	TR 2SC930 E IF SP
Q202	STC536G+++UB	TR 2SC536 G AUD B SP
Q203	STC536G+++UB	TR 2SC536 G AUD B SP
Q301	STC536G+++UB	TR 2SC536 G AUD B SP
Q302	STC536G+++UB	TR 2SC536 G AUD B SP
Q303	STD1012G++++T	TR 2SD1012 G T
Q304	STD1012G++++T	TR 2SD1012 G T
Q351	STC536G+++UB	TR 2SC536 G AUD B SP
Q352	STA608F++++B	TR 2SA608 F B SP
Q353	STA608F++++B	TR 2SA608 F B SP
Q354	STC536G+++UB	TR 2SC536 G AUD B SP
Q355	STC536G+++UB	TR 2SC536 G AUD B SP
Q356	STA608F++++B	TR 2SA608 F B SP
Q357	STC536G+++UB	TR 2SC536 G AUD B SP
Q358	STA608F++++B	TR 2SA608 F B SP
Q401	SF2K222++++E++	FET 2SK222 E
Q402	STC1571F++++T	TR 2SC1571 F
Q403	STC2999E++++T	TR 2SC2999 E T
D101	SDGMA01+++++T	DIODE GMA01
D102	SDGMA01+++++T	DIODE GMA01
D301	SDDS442+X++++T	DIODE DS442 X
D302	SDDS442+X++++T	DIODE DS442 X
D351	SDGMA01+++++T	DIODE GMA01
D352	SDMTZ062C+++T	ZENER DIODE MTZ6.2C
D401	SDGMA01+++++T	DIODE GMA01
D402	SDGMA01+++++T	DIODE GMA01
D403	SDDS442+X++++T	DIODE DS442 X
D404	SDDS442+X++++T	DIODE DS442 X
D405	SDDS442+X++++T	DIODE DS442 X
D406	SDGMA01+++++T	DIODE GMA01
D407	SDGMA01+++++T	DIODE GMA01
D408	SDGMA01+++++T	DIODE GMA01

## PARTS LIST

Ref. No.	Part No.	Description
D409	SDGMA01+++++T	DIODE GMA01
D410	SDGMA01+++++T	DIODE GMA01
D411	SDGMA01+++++T	DIODE GMA01
C101	CC+50101KAYBG	CERAMIC 100PF 50V K A YB
C102	CC+50620JASLG	CERAMIC 62PF 50V J A SL
C103	CC+50220JASLG	CERAMIC 22PF 50V J A SL
C104	CC+50101KAYBG	CERAMIC 100PF 50V K A YB
C105	CC+50102KAYBG	CERAMIC 0.001MF 50V K A YB
C106	CC+50102KAYBG	CERAMIC 0.001MF 50V K A YB
C107	CC+505R6KASLG	CERAMIC 5.6PF 50V K A SL
C109	CC+50101KAYBG	CERAMIC 100PF 50V K A YB
C110	CB+16103MA+YG	BC CON 0.01MF 16V M A Y
C111	CB+16103MA+YG	BC CON 0.01MF 16V M A Y
C112	CC+501R5MACHG	CERAMIC 1.5PF 50V M A CH
C113	CC+503R3KAUJG	CERAMIC 3.3PF 50V K A UJ
C114	CC+50103ZRYFF	CERAMIC 0.01MF 50V Z R YF
C115	CC+50100JACHG	CERAMIC 10PF 50V J A CH
C116	CC+50220JAUJG	CERAMIC 22PF 50V J A UJ
C117	CC+50100JACHG	CERAMIC 10PF 50V J A CH
C118	CB+16103MA+YG	BC CON 0.01MF 16V M A Y
C119	CC+50102KAYBG	CERAMIC 0.001MF 50V K A YB
C120	CC+50102KAYBG	CERAMIC 0.001MF 50V K A YB
C121	CC+50100JASLG	CERAMIC 10PF 50V J A SL
C122	CB+16103MA+YG	BC CON 0.01MF 16V M A Y
C123	CC+50010MASLG	CERAMIC 1PF 50V M A SL
C124	CB+16103MA+YG	BC CON 0.01MF 16V M A Y
C125	CB+16103MA+YG	BC CON 0.01MF 16V M A Y
C126	CC+50102KAYBG	CERAMIC 0.001MF 50V K A YB
C127	CC+50103ZRYFF	CERAMIC 0.01MF 50V Z R YF
C128	CC+50220JASLG	CERAMIC 22PF 50V J A SL
C129	CB+16103ML+YG	BC CON 0.01MF 16V M L + Y
C130	CC+50100JASLG	CERAMIC 10PF 50V J A SL
C151	CB+25223MRXRF	BC CON 0.022MF 25V M R XR
C153	CC+50102KRYBF	CERAMIC 0.001MF 50V K R YB
C154	CN100561JR++F	P P CON 560PF 100V J R
C155	CN100561JR++F	P P CON 560PF 100V J R
C156	CB+25223MRXRF	BC CON 0.022MF 25V M R XR
C157	CC+50220JASLG	CERAMIC 22PF 50V J A SL
C158	CC+50221KRYBF	CERAMIC 220PF 50V K R YB
C159	CB+25223MRXRF	BC CON 0.022MF 25V M R XR
C160	CC+50120JRUIJ	CERAMIC 12PF 50V J R UJ N750
C161	CC+50680JRCHF	CERAMIC 68PF 50V J R CH F NPO
C201	CC+50103ZRYFF	CERAMIC 0.01MF 50V Z R YF
C202	CC+50103ZRYFF	CERAMIC 0.01MF 50V Z R YF
C203	CC+50223ZRYFF	CERAMIC 0.022 50V Z R YF
C204	CC+50223ZRYFF	CERAMIC 0.022 50V Z R YF
C205	CC+50223ZRYFF	CERAMIC 0.022 50V Z R YF
C206	CE+50105MRHAF	ELECT 1MF 50V M R HA F
C207	CB+25223MRXRF	BC CON 0.022MF 25V M R XR
C208	CE+10107MRHAF	ELECT 100MF 10V M R HA F
C209	CC+50101KAYBG	CERAMIC 100PF 50V K A YB
C210	CC+50431JRSLF	CERAMIC 430PF 50V J R SL S
C211	CB+16103MA+YG	BC CON 0.01MF 16V M A Y
C212	CB+25473MRXRF	BC CON 0.047MF 25V M R XR
C213	CE+25106MRHAF	ELECT 10MF 25V M R HA F
C214	CC+50223ZRYFF	CERAMIC 0.022 50V Z R YF
C215	CE+25475MRHAF	ELECT 4.7MF 25V M R HA F
C216	CE+25475MRHAF	ELECT 4.7MF 25V M R HA F
C217	CE+25475MRHAF	ELECT 4.7MF 25V M R HA F
C218	CB+25223MRXRF	BC CON 0.022MF 25V M R XR
C219	CB+25223MRXRF	BC CON 0.022MF 25V M R XR
C220	CE+25106MRHAF	ELECT 10MF 25V M R HA F
C221	CE+25106MRHAF	ELECT 10MF 25V M R HA F
C222	CB+25223MRXRF	BC CON 0.022MF 25V M R XR
C223	CE+25106MRHAF	ELECT 10MF 25V M R HA F
C301	CC+50103ZRYFF	CERAMIC 0.01MF 50V Z R YF
C302	CE+10107MRHAF	ELECT 100MF 10V M R HA F
C303	CB+25103KRXRF	BC CON 0.01MF 25V K R XR
C304	CB+25103KRXRF	BC CON 0.01MF 25V K R XR
C305	CE+50474MRHAF	ELECT 0.47MF 50V M R HA F
C306	CE+50474MRHAF	ELECT 0.47MF 50V M R HA F
C307	CB+25222KRXRF	BC CON 0.0022MF 25V K R XR
C308	CB+25222KRXRF	BC CON 0.0022MF 25V K R XR

Ref. No.	Part No.	Description
C309	CC+50471KRYBF	CERAMIC 470PF 50V K R YB
C310	CC+50471KRYBF	CERAMIC 470PF 50V K R YB
C311	CE+50105MRHAF	ELECT 1MF 50V M R HA F
C312	CE+50105MRHAF	ELECT 1MF 50V M R HA F
C313	CB+25392KRXRF	BC CON 0.0039MF 25V K R XR
C314	CB+25392KRXRF	BC CON 0.0039MF 25V K R XR
C315	CB+25222KRXRF	BC CON 0.0022MF 25V K R XR
C316	CB+25222KRXRF	BC CON 0.0022MF 25V K R XR
C317	CB+25223MRXRF	BC CON 0.0022MF 25V M R XR
C321	CE+50105MRHAF	ELECT 1MF 50V M R HA F
C322	CE+50105MRHAF	ELECT 1MF 50V M R HA F
C323	CE+50474MRHAF	ELECT 0.47MF 50V M R HA F
C324	CN100102JR++F	P P CON 1000PF 100V J R
C351	CC+50103ZRYFF	CERAMIC 0.01MF 50V Z R YF
C352	CE+16107MRHAF	ELECT 100MF 16V M R HA F
C353	CE+25475MRHAF	ELECT 4.7MF 25V M R HA F
C354	CE+25106MRHAF	ELECT 10MF 25V M R HA F
C355	CE+50105MRHAF	ELECT 1MF 50V M R HA F
C356	CE+25106MRHAF	ELECT 10MF 25V M R HA F
C401	CA+16154MV++S	AL ELECT 0.15MF 16V M V
C402	CB+25223MRXRF	BC CON 0.022MF 25V M R XR
C403	CC+50101KAYBG	CERAMIC 100PF 50V K A YB
C404	CC+50102KAYBG	CERAMIC 0.001MF 50V K A YB
C405	CE+10107MRHAF	ELECT 100MF 10V M R HA F
C406	CC+50103ZRYFF	CERAMIC 0.01MF 50V Z R YF
C407	CC+50102KAYBG	CERAMIC 0.001MF 50V K A YB
C408	CB+16103MA+YG	BC CON 0.01MF 16V M A Y
C409	CC+50103ZRYFF	CERAMIC 0.01MF 50V Z R YF
C410	CC+50180JACHG	CERAMIC 18PF 50V J A CH
C411	CC+50180JACHG	CERAMIC 18PF 50V J A CH
C412	CC+50102KAYBG	CERAMIC 0.001MF 50V K A YB
C413	CE+25106MRHAF	ELECT 10MF 25V M R HA F
C414	CC+50103ZRYFF	CERAMIC 0.01MF 50V Z R YF
C415	4-223T-16100	CAPACITOR 0.1MF 5.5V
C416	CC+50102KAYBG	CERAMIC 0.001MF 50V K A YB
C417	CC+50102KAYBG	CERAMIC 0.001MF 50V K A YB
C418	CC+16103MA+YG	BC CON 0.01MF 16V M A Y
C419	CB+16103MA+YG	BC CON 0.01MF 16V M A Y
C420	CB+16103MA+YG	BC CON 0.01MF 16V M A Y
R101	401 019 1961	CARBON 3.9K JA 1/4W
R102	401 024 7450	CARBON 10K JA 1/6W
R103	401 024 7747	CARBON 100K JA 1/6W
R104	401 026 3747	CARBON 33 JA 1/6W
R105	401 015 1668	CARBON 180 JA 1/4W
R106	401 024 7450	CARBON 10K JA 1/6W
R107	401 027 2640	CARBON 5.6K JA 1/6W
R108	401 025 1942	CARBON 15K JA 1/6W
R109	401 025 1645	CARBON 1.5K JA 1/6W
R110	401 025 3847	CARBON 180 JA 1/6W
R111	401 024 7450	CARBON 10K JA 1/6W
R112	401 027 8642	CARBON 8.2K JA 1/6W
R113	401 025 1942	CARBON 15K JA 1/6W
R114	401 026 1040	CARBON 2.7K JA 1/6W
R115	401 025 3847	CARBON 180 JA 1/6W
R116	401 025 3847	CARBON 180 JA 1/6W
R117	401 025 7449	CARBON 220 JA 1/6W
R118	401 025 7845	CARBON 2.2K JA 1/6W
R119	401 024 7747	CARBON 100K JA 1/6W
R120	401 015 1668	CARBON 180 JA 1/4W
R121	401 026 3945	CARBON 330 JA 1/6W
R122	401 024 7450	CARBON 10K JA 1/6W
R151	401 024 7450	CARBON 10K JA 1/6W
R153	401 026 4645	CARBON 33K JA 1/6W
R155	401 024 7747	CARBON 100K JA 1/6W
R156	401 026 4348	CARBON 3.3K JA 1/6W
R157	401 024 8041	CARBON 1M JA 1/6W
R158	401 026 4348	CARBON 3.3K JA 1/6W
R160	401 026 4348	CARBON 3.3K JA 1/6W
R162	401 026 4348	CARBON 3.3K JA 1/6W
R165	401 026 4348	CARBON 3.3K JA 1/6W
R166	401 027 3241	CARBON 560K JA 1/6W
R167	401 025 7449	CARBON 220 JA 1/6W
R168	401 015 1668	CARBON 180 JA 1/4W
R169	401 024 8041	CARBON 1M JA 1/6W

# PARTS LIST

Ref. No.	Part No.	Description
R201	401 027 8345	CARBON 820 JA 1/6W
R202	401 026 7042	CARBON 3.9K JA 1/6W
R203	401 026 3945	CARBON 330 JA 1/6W
R204	401 026 3945	CARBON 330 JA 1/6W
R205	401 024 7450	CARBON 10K JA 1/6W
R206	401 026 4645	CARBON 33K JA 1/6W
R207	401 015 1668	CARBON 180 JA 1/4W
R208	401 024 9048	CARBON 120 JA 1/6W
R210	401 025 8248	CARBON 22K JA 1/6W
R211	401 026 4645	CARBON 33K JA 1/6W
R212	401 024 7450	CARBON 10K JA 1/6W
R213	401 024 7450	CARBON 10K JA 1/6W
R214	401 026 3945	CARBON 330 JA 1/6W
R216	401 024 7747	CARBON 100K JA 1/6W
R217	401 026 4348	CARBON 3.3K JA 1/6W
R219	401 025 4646	CARBON 18K JA 1/6W
R220	401 024 7747	CARBON 100K JA 1/6W
R221	401 027 3241	CARBON 560K JA 1/6W
R301	401 026 3945	CARBON 330 JA 1/6W
R302	401 026 4645	CARBON 33K JA 1/6W
R303	401 026 9947	CARBON 4.7K JA 1/6W
R304	401 026 9947	CARBON 4.7K JA 1/6W
R305	401 024 9741	CARBON 12K JA 1/6W
R306	401 013 6467	CARBON 12K JA 1/4W
R307	401 024 9741	CARBON 12K JA 1/6W
R308	401 013 6467	CARBON 12K JA 1/4W
R309	401 025 7449	CARBON 220 JA 1/6W
R310	401 025 7449	CARBON 220 JA 1/6W
R311	401 027 6143	CARBON 680K JA 1/6W
R312	401 027 6143	CARBON 680K JA 1/6W
R313	401 016 3869	CARBON 2.2K JA 1/4W
R314	401 016 3869	CARBON 2.2K JA 1/4W
R315	401 024 7747	CARBON 100K JA 1/6W
R316	401 024 7747	CARBON 100K JA 1/6W
R317	401 026 4348	CARBON 3.3K JA 1/6W
R318	401 018 3877	CARBON 3.3K JA 1/4W
R321	401 024 7450	CARBON 10K JA 1/6W
R322	401 024 7450	CARBON 10K JA 1/6W
R323	401 012 7069	CARBON 10K JA 1/4W
R324	401 024 7044	CARBON 1K JA 1/6W
R325	401 022 3167	CARBON 6.8K JA 1/4W
R326	401 015 3860	CARBON 18K JA 1/4W
R351	401 024 7747	CARBON 100K JA 1/6W
R352	401 025 8248	CARBON 22K JA 1/6W
R353	401 025 8248	CARBON 22K JA 1/6W
R354	401 026 4645	CARBON 33K JA 1/6W
R355	401 026 3945	CARBON 330 JA 1/6W
R356	401 026 4645	CARBON 33K JA 1/6W
R357	401 021 3069	CARBON 5.6K JA 1/4W
R358	401 026 4348	CARBON 3.3K JA 1/6W
R359	401 012 8165	CARBON 100K JA 1/4W
R360	401 026 4645	CARBON 33K JA 1/6W
R361	401 025 1942	CARBON 15K JA 1/6W
R362	401 026 3945	CARBON 330 JA 1/6W
R363	401 012 7069	CARBON 10K JA 1/4W
R364	401 024 7044	CARBON 1K JA 1/6W
R365	401 015 1668	CARBON 180 JA 1/4W
R366	401 026 4645	CARBON 33K JA 1/6W
R367	401 025 1942	CARBON 15K JA 1/6W
R368	401 025 1942	CARBON 15K JA 1/6W
R401	401 027 5542	CARBON 6.8K JA 1/6W
R402	401 025 1645	CARBON 1.5K JA 1/6W
R403	401 027 2343	CARBON 560 JA 1/6W
R404	401 025 1645	CARBON 1.5K JA 1/6W
R405	401 025 1942	CARBON 15K JA 1/6W
R406	401 014 5261	CARBON 15K JA 1/4W
R407	401 026 3945	CARBON 330 JA 1/6W
R408	401 027 5245	CARBON 680 JA 1/6W
R409	401 024 7450	CARBON 10K JA 1/6W
R410	401 024 7450	CARBON 10K JA 1/6W
R411	401 024 7450	CARBON 10K JA 1/6W
R412	401 024 7450	CARBON 10K JA 1/6W
R413	401 024 7044	CARBON 1K JA 1/6W

Ref. No.	Part No.	Description
R414	401 024 7044	CARBON 1K JA 1/6W
R415	401 024 7450	CARBON 10K JA 1/6W
R416	401 024 7450	CARBON 10K JA 1/6W
R417	401 024 7450	CARBON 10K JA 1/6W
R418	401 026 4348	CARBON 3.3K JA 1/6W
R419	401 024 7450	CARBON 10K JA 1/6W
R420	401 024 7450	CARBON 10K JA 1/6W
R422	401 026 4645	CARBON 33K JA 1/6W
R423	401 024 6740	CARBON 100 JA 1/6W
R424	401 018 4953	CARBON 33K JA 1/4W
R3101	401 025 7449	CARBON 220 JA 1/6W

## PRESET PCB ASSY

Ref. No.	Part No.	Description
64	141-4-290T-07500	P.C BOARD ASSY, PRESET (W.GERMANY/EUROPE)
	141-4-290T-07501	P.C BOARD ASSY, PRESET (ITALY)
S401	4-267T-17176	SOCKET, 6P
S402	4-238T-84673	SWITCH, CH1
S403	4-238T-84673	SWITCH, CH2
S404	4-238T-84673	SWITCH, CH3
S405	4-238T-84673	SWITCH, CH4
S406	4-238T-84673	SWITCH, CH5

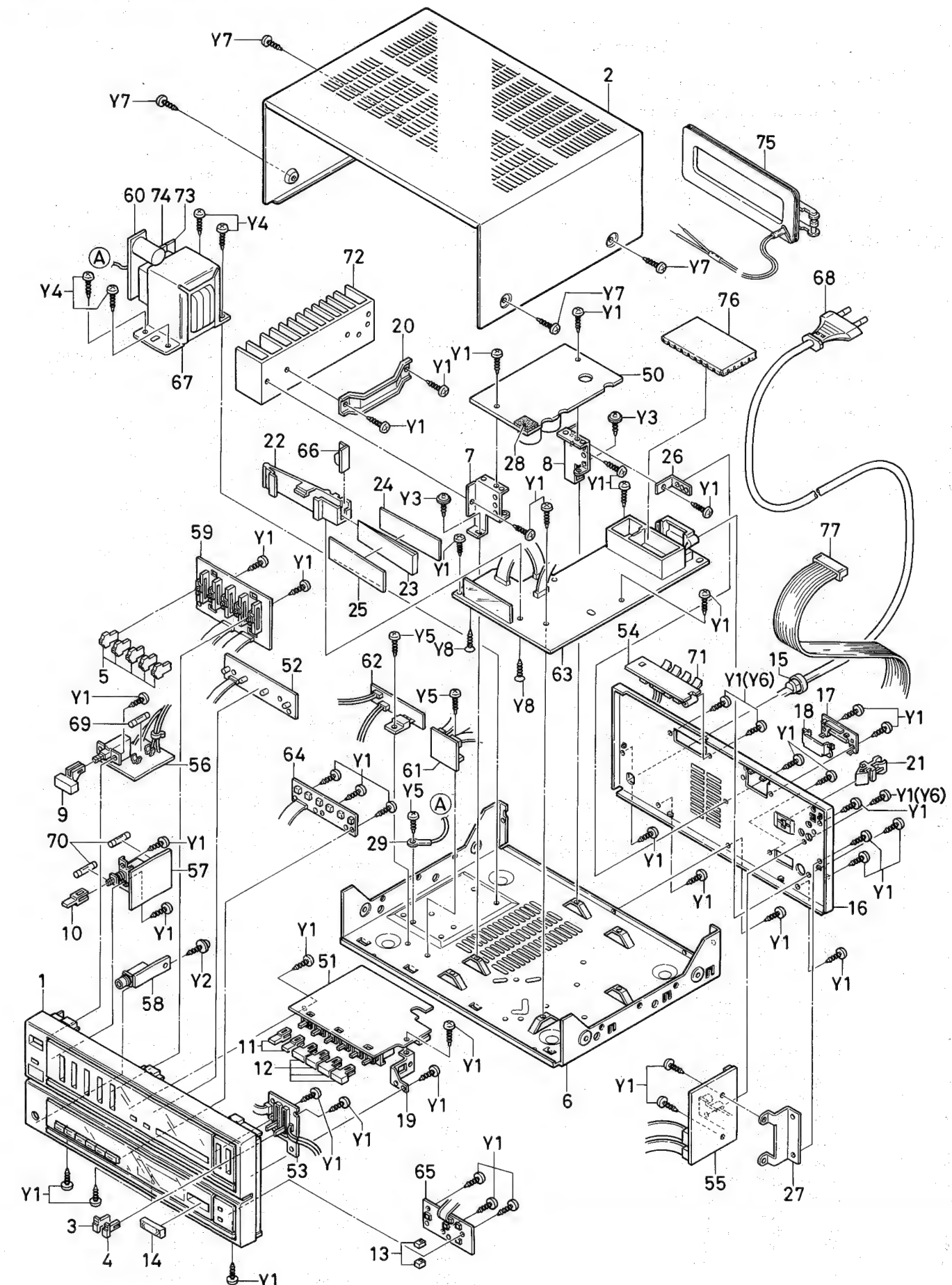
## BAND SELECT SWITCH PCB ASSY

Ref. No.	Part No.	Description
65	141-4-290T-07600	P.C BOARD ASSY, BAND SELECT SWITCH (W.GERMANY/EUROPE)
	141-4-290T-07601	P.C BOARD ASSY, BAND SELECT SWITCH (ITALY)
S407	4-267T-17177	SOCKET, 7P
S408	4-238T-84673	SWITCH, BAND
S409	4-238T-84673	SWITCH, AM/FM
S410	4-238T-84673	SWITCH, UP
		SWITCH, DOWN

## LAMP PCB ASSY

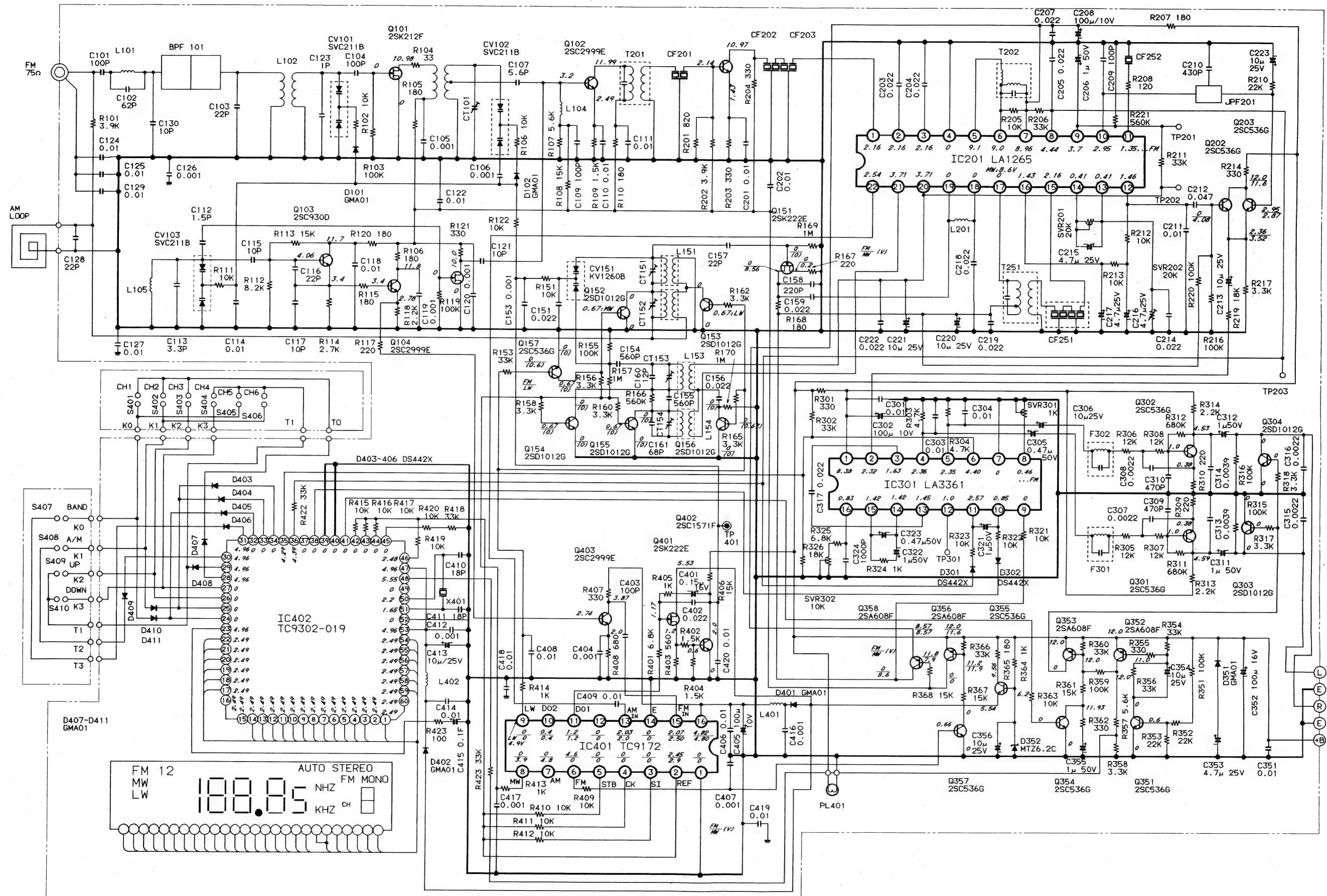
Ref. No.	Part No.	Description
66	141-4-290T-07700	P.C BOARD ASSY, LAMP (W.GERMANY/EUROPE)
	141-4-290T-07701	P.C BOARD ASSY, LAMP (ITALY)
PL401	141-2-329T-09300	REFLECTOR
	4-612T-17400	LAMP

# CABINET & CHASSIS EXPLODED VIEW

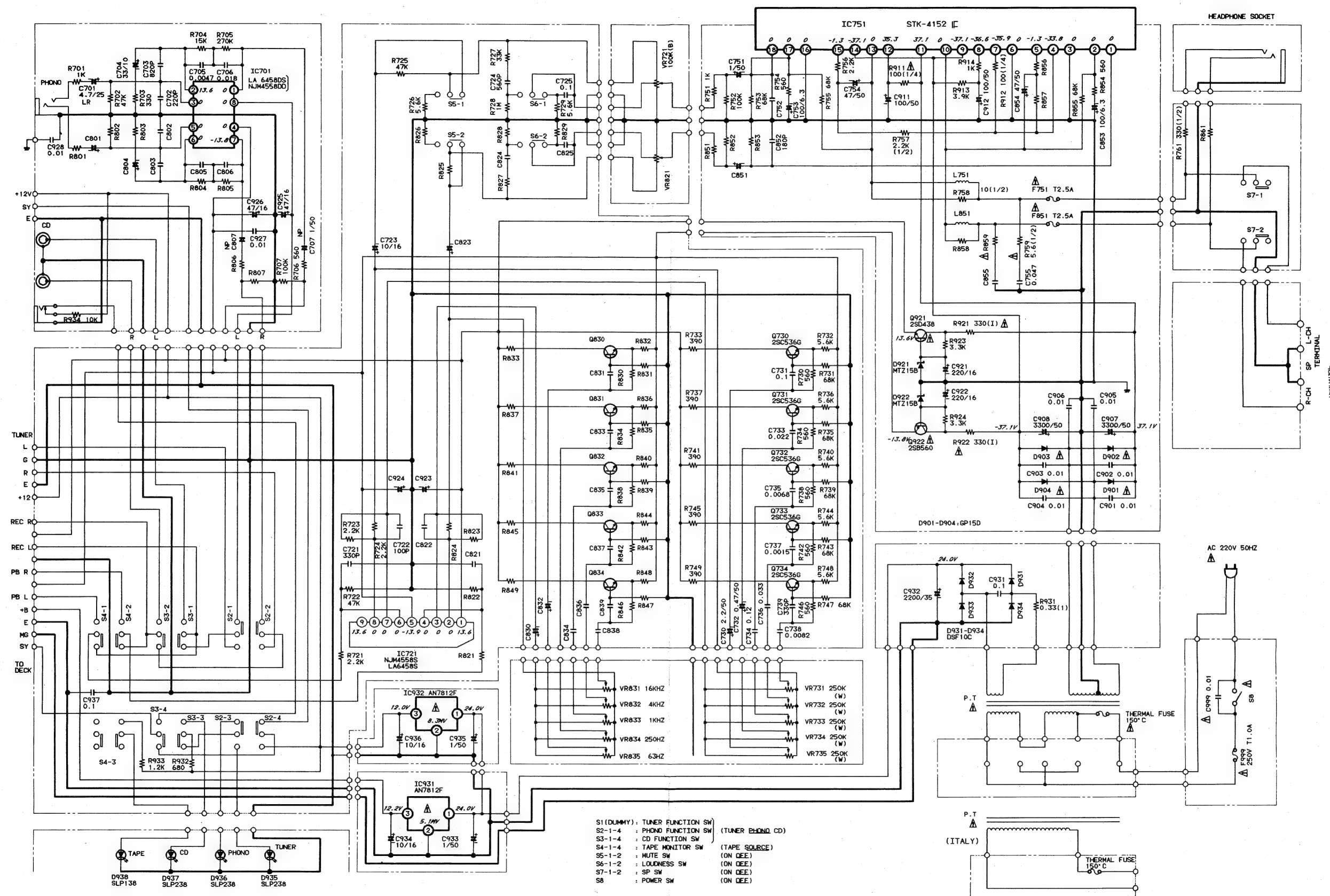






**SCHEMATIC DIAGRAM (TUNER).**



SCHEMATIC DIAGRAM (AMP) (EUROPE/ITALY)

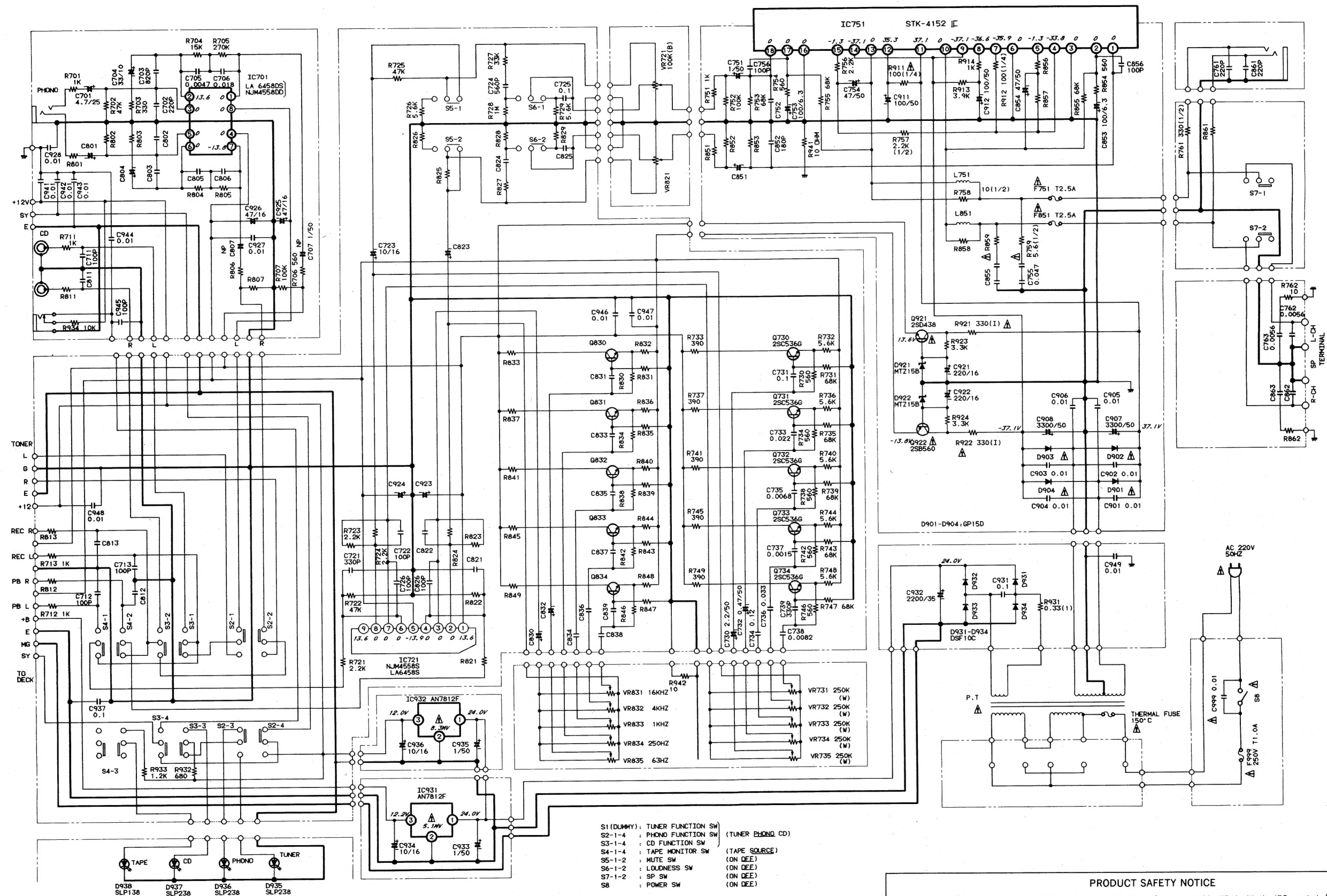


PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol  in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with , use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.

Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

# SCHEMATIC DIAGRAM (AMP) (W. GERMANY)



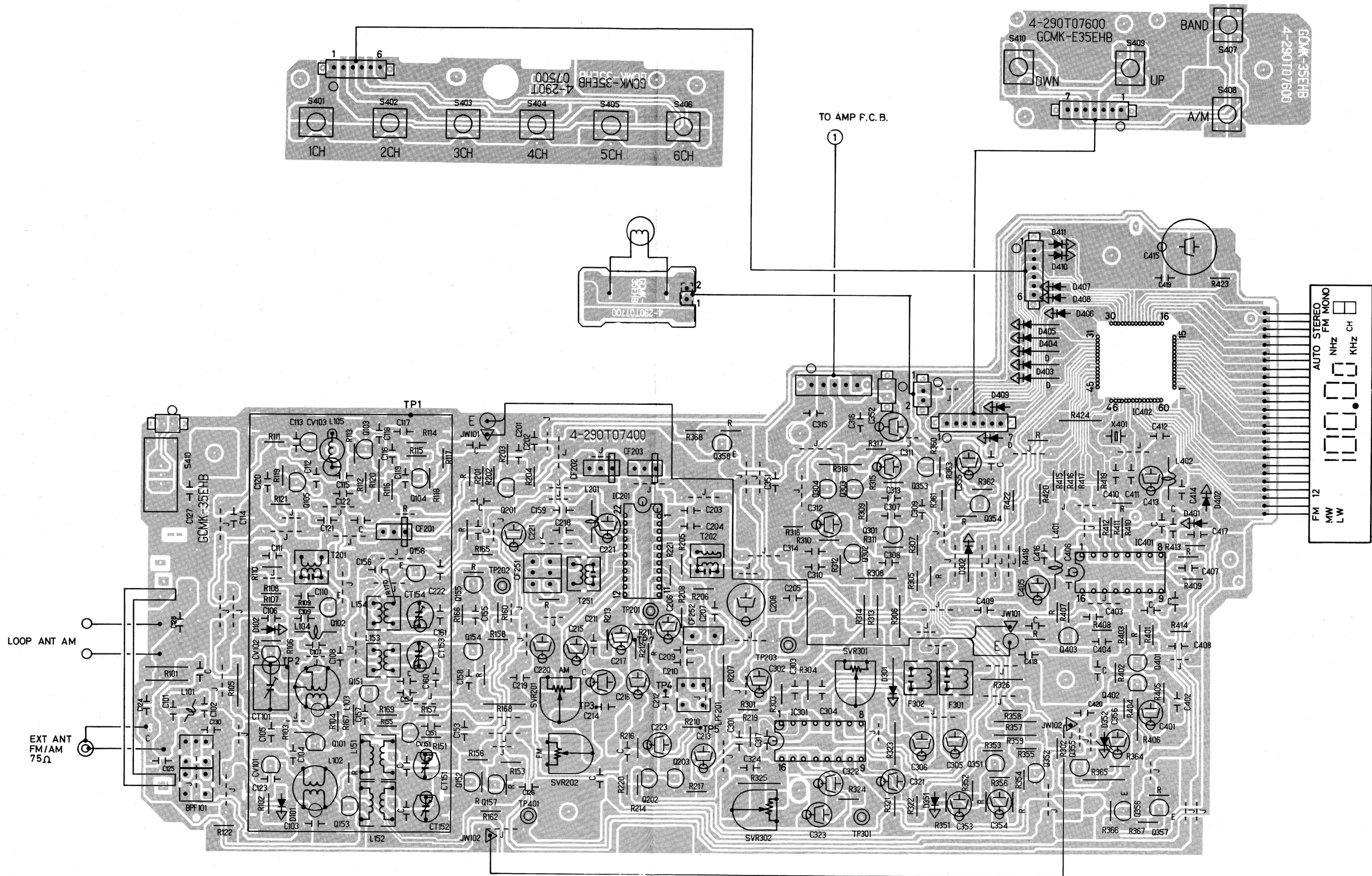
## PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol  $\Delta$  in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with  $\Delta$ , use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.

Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

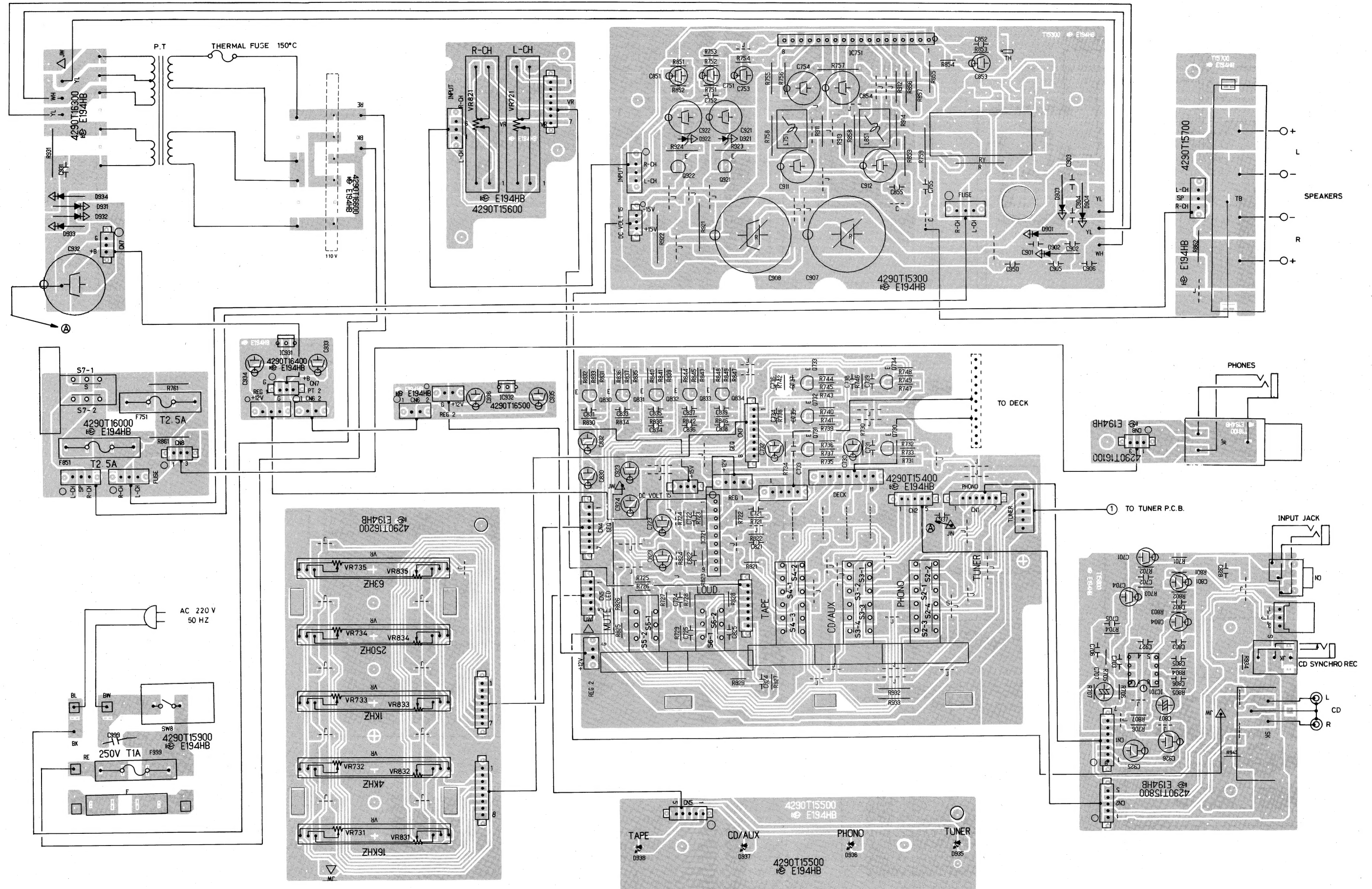


WIRING DIAGRAM (TUNER)



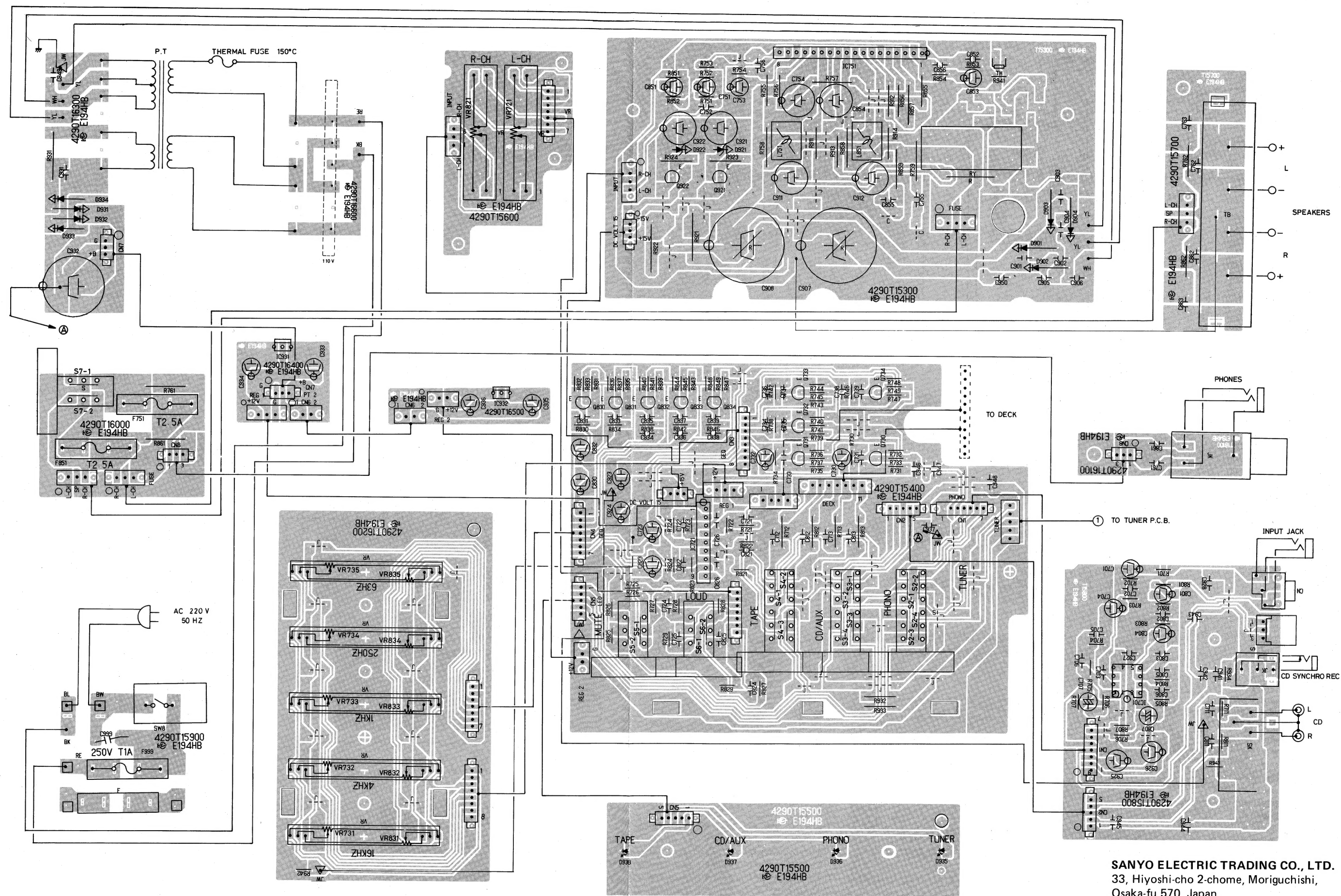


### WIRING DIAGRAM (AMP) (EUROPE/ITALY).





WIRING DIAGRAM (AMP) (W. GERMANY)



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